

ABSTRACT OF THE INVENTION

Apparatus and method for treating a surface of a substrate for electrolytic or electroless plating of metals in integrated circuit manufacturing. In one embodiment the method includes forming a barrier layer on a substrate. A metal-seed layer is then formed on the barrier layer. The method continues by performing in situ surface treatment of the metal-seed layer to form a passivation layer on the metal-seed layer.

In another embodiment of a method of this invention, a substrate is provided into an electroplating tool chamber. The substrate has a barrier layer formed thereon, a metal seed layer formed on the barrier layer and a passivation layer formed over the metal seed layer. The method continues by annealing the substrate in forming gas to reduce the passivation layer. A conductive material is deposited on the substrate using an electrolytic plating or electroless plating process.